Quark Matter 2006 Conf. - Nov. 14-20, 2006 - Shanghai - P. R. China
Please select: oral talk

High-p_T Identified Hadron Production in Au+Au and Cu+Cu Collisions at RHIC-PHENIX

M. Konno[a] for the PHENIX Collaboration

[a]Graduate School of Pure and Applied Sciences, University of Tsukuba
Tsukuba, Ibaraki, 305-8571, Japan, *konno@rcf.rhic.bnl.gov*

Identified hadron analyses in heavy ion collisions at RHIC show particle type dependences of hadron yields, especially a baryon/meson difference at intermediate p_T (2∼5 GeV/c). In central Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV, there is a significant suppression in meson yield compared to expectations from scaled p+p results. In contrast, a large enhancement of baryons relative to mesons is observed in this p_T region. The p_T region is considered to have both soft and hard hadron production mechanisms. Here, soft part includes hydrodynamic flow, quark recombination, etc. and hard part includes jet fragmentation, which is well described by pQCD calculation. We also observe some indications of transition from soft to hard hadron production, for example, in particle ratios. Therefore, a detailed study of identified hadron spectra and yields in intermediate and higher p_T region could be effective to understand multiple hadron production mechanisms as mentioned above.

The p_T reach of charged hadron identification has been extended by high statistics data and the introduction of an aerogel Cherenkov detector. We can now study the identified hadron production at higher p_T (up to 5 GeV/c for charged pions, and 7 GeV/c for (anti)protons). using the PHENIX detector. In addition to heavy ion data (Au+Au, Cu+Cu at $\sqrt{s_{NN}} = 200$ GeV) obtained in the past RHIC runs, we have high statistics 200 GeV p+p data. The p+p data provides baseline spectra to heavy ion data, and it is important to quantify in-medium nuclear effects in heavy ion collisions at RHIC.

We will present high-p_T identified hadron p_T spectra (π/K/p and their antiparticles), particle ratios, nuclear modification factors and their scaling properties in Au+Au and Cu+Cu collisions at $\sqrt{s_{NN}} = 200$ GeV.